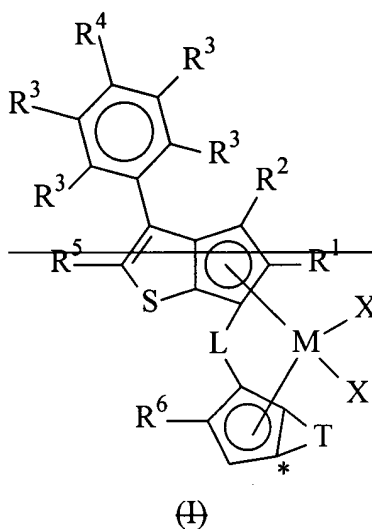
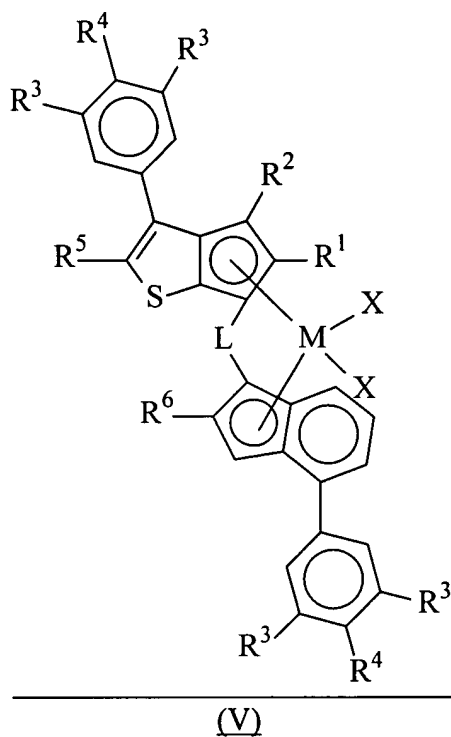
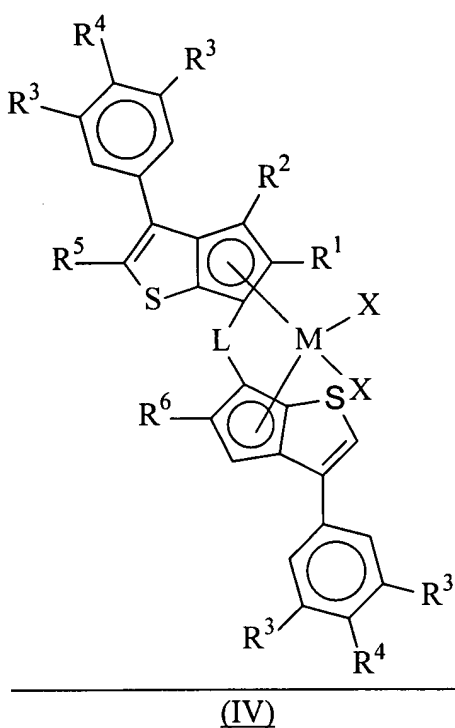


AMENDMENTS TO THE CLAIMS

1. (currently amended) A process for producing a polymer of ethylene containing from 0.1 to 99 % by mol of at least one derived unit of alpha-olefins of formula $\text{CH}_2=\text{CHZ}$, wherein Z is a $\text{C}_2\text{-C}_{20}$ alkyl radical, and optionally from 0 to 5% by mol polyene, comprising contacting, under polymerization conditions, ethylene, at least one alpha-olefin and optionally said polyene, in the presence of a catalyst system obtained by contacting:
- a) a metallocene compound of formula (I):



(IV) or (V):



wherein

M is zirconium, hafnium or titanium;

X, equal to or different from each other, is a hydrogen atom, a halogen atom, an R, OR, OR'O, OSO₂CF₃, OCOR, SR, NR₂ or PR₂ group, wherein R is a linear or branched, saturated or unsaturated C₁-C₂₀-alkyl, C₃-C₂₀-cycloalkyl, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl, or C₇-C₂₀-arylalkyl radical, optionally containing at least one heteroatom belonging to groups 13-17 of the Periodic Table of the Elements; and the R' substituent is a divalent group selected from C₁-C₄₀-alkylidene, C₆-C₄₀-arylidene, C₇-C₄₀-alkylarylidene or C₇-C₄₀-arylalkylidene radicals; two X can join to form a C₄-C₄₀ dienyl ligand;

R¹ is a linear or branched, saturated or unsaturated C₁-C₂₀-alkyl, C₃-C₂₀-cycloalkyl, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl, or C₇-C₂₀-arylalkyl radical, optionally containing at least one heteroatom belonging to groups 13-17 of the Periodic Table of the Elements;

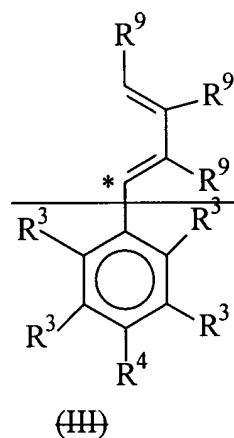
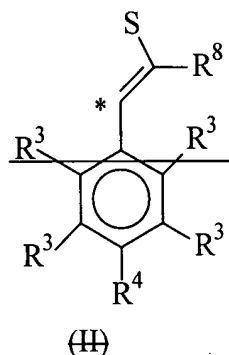
R², R³, R⁴ and R⁵, equal to or different from each other, are hydrogen atoms, halogen atoms or linear or branched, saturated or unsaturated C₁-C₂₀-alkyl, C₃-C₂₀-cycloalkyl, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl, or C₇-C₂₀-arylalkyl radicals, optionally containing at least one heteroatom belonging to groups 13-17 of the Periodic Table of the Elements;

R³ is a hydrogen atom or a linear or branched, saturated or unsaturated C₁-C₁₀-alkyl radical, optionally containing at least one halogen atom and R⁴ is a hydrogen atom or a linear or branched, saturated or unsaturated C₁-C₁₀-alkyl radical, optionally containing at least one halogen atom, wherein when R³ is a hydrogen atom, R⁴ is a linear or branched, saturated or unsaturated C₁-C₁₀-alkyl radical, optionally containing at least one halogen atom, and when R³ is a linear or branched, saturated or unsaturated C₁-C₁₀-alkyl radical optionally containing at least one halogen atom, R⁴ is a hydrogen atom;

R⁶ is a linear or branched, saturated or unsaturated C₁-C₂₀-alkyl, C₃-C₂₀-cycloalkyl, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl, or C₇-C₂₀-arylalkyl radical, optionally containing at least one heteroatom belonging to groups 13-17 of the Periodic Table of the Elements;

L is a divalent bridging group selected from C₁-C₂₀ alkylidene, C₃-C₂₀ cycloalkylidene, C₆-C₂₀ arylidene, C₇-C₂₀ alkylarylidene, or C₇-C₂₀ arylalkylidene radicals, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements, or a silylidene radical containing up to 5 silicon atoms;

~~T is a divalent radical of formula (II) or (III);~~



wherein

~~the atom marked with the symbol * is linked to the atom marked with the same symbol in the compound of formula (I);~~

~~R⁸ is a hydrogen atom or a linear or branched, saturated or unsaturated C₄-C₂₀-alkyl, C₃-C₂₀-cycloalkyl, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl, or C₇-C₂₀-arylalkyl radical, optionally containing at least one heteroatom belonging to groups 13-17 of the Periodic Table of the Elements;~~

~~R⁹, equal to or different from each other, is a hydrogen atom or a linear or branched, saturated or unsaturated C₁-C₂₀-alkyl, C₃-C₂₀-cycloalkyl, C₆-C₂₀-aryl, C₇-C₂₀-alkylaryl, or C₇-C₂₀-arylalkyl radical, optionally containing at least one heteroatom belonging to groups 13-17 of the Periodic Table of the Elements; and~~

b) an alumoxane or a compound that forms an alkyl metallocene cation.

2. (original) The process according to claim 1 wherein the catalyst system further comprises an organo aluminum compound.
3. (currently amended) The process according to claim 1 wherein in the compound of formula ~~(I)~~(IV) or (V),

X is a halogen atom, an R, OR'O or OR group; R¹ is a linear or branched, saturated or unsaturated C₁-C₂₀-alkyl radical; R² is a hydrogen atom; ~~R³ is a hydrogen atom or a linear or branched, saturated or unsaturated C₁-C₂₀-alkyl radical optionally containing at least one halogen atom; R⁴ is a hydrogen atom or a linear or branched, saturated or unsaturated C₁-C₂₀-alkyl radical; R⁶ is a linear or branched, saturated or unsaturated C₁-C₂₀-alkyl radical; and L is Si(CH₃)₂, SiPh₂, SiPhMe, SiMe(SiMe₃), CH₂, (CH₂)₂, (CH₂)₃, C(CH₃)₂, C(Ph)₂ or C(CH₃)(Ph); R⁸ is hydrogen or a linear or branched, saturated or unsaturated C₁-C₂₀-alkyl radical; and R⁹ is hydrogen or a linear or branched, saturated or unsaturated C₁-C₂₀-alkyl radical.~~

4. (cancelled)
5. (currently amended) The process according to claim ~~[[4]]~~1 wherein, in the compounds of formula (IV) and (V), when R³ is a hydrogen atom, R⁴ is or a group-C(R⁷)₃, wherein R⁷, equal to or different from each other, is a linear or branched, saturated or unsaturated C₁-C₈-alkyl radical; and when R⁴ is hydrogen, R³ is or a group-C(R⁷)₃, wherein R⁷, equal to or different from each other, is a linear or branched, saturated or unsaturated C₁-C₈-alkyl radical
6. (cancelled)
7. (cancelled)
8. (previously presented) The process according to claim 1 wherein the catalyst system is supported on an inert carrier.
9. (previously presented) The process according to claim 8 wherein the inert carrier is a polyolefin.

10. (previously presented) The process according to claim 1 wherein the process is carried out in gas phase.
11. (previously presented) The process according to claim 1 wherein the alpha-olefin is 1-pentene, 1-hexene or 1-octene.
12. (cancelled)
13. (cancelled)